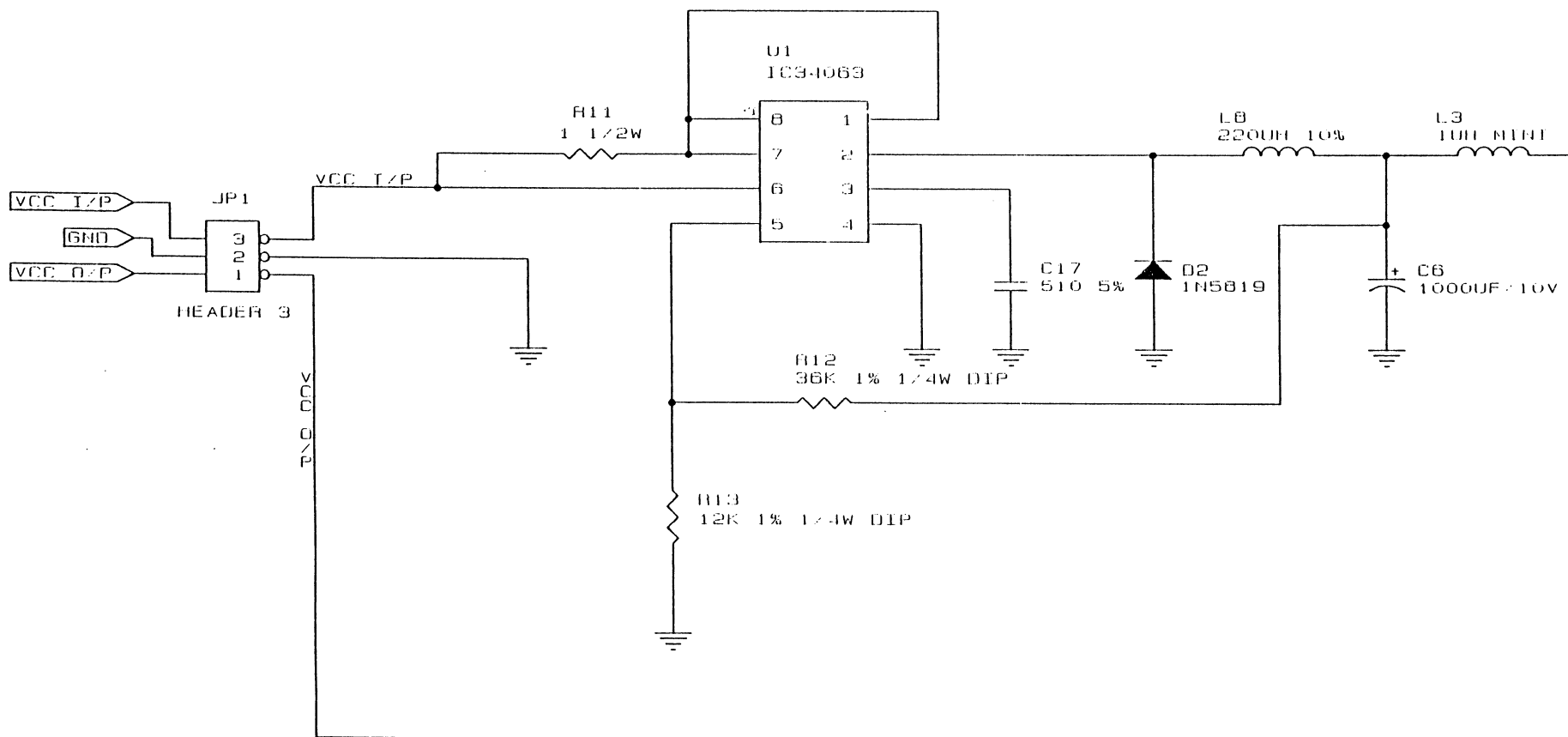


ZEHND

BX61

MODEL

SERVICE MANUAL



6.5V REGULATOR FOR CPU STANBY POWER

Title

5V SWITCHING

Size Document Number

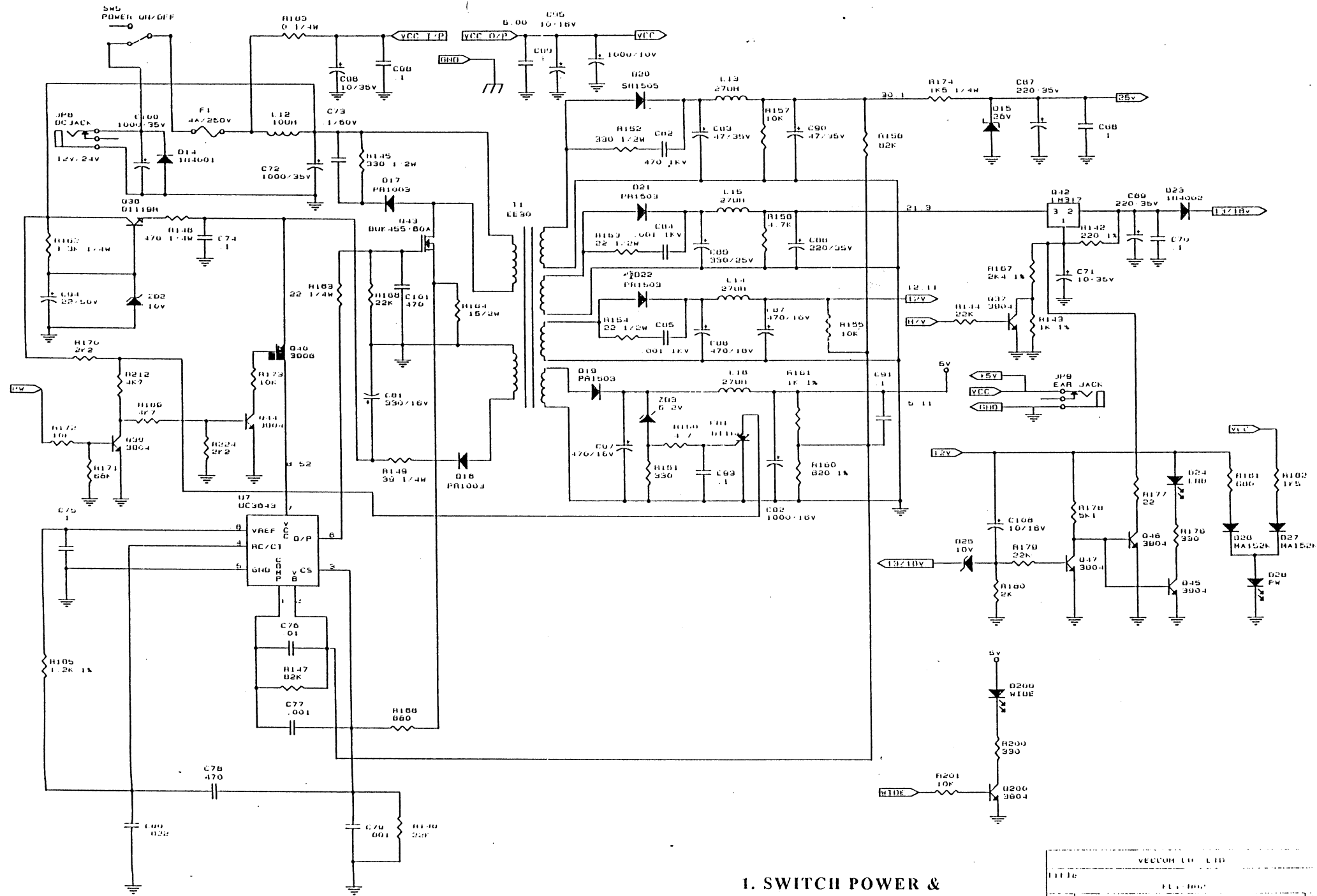
REV

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FANMA1 5

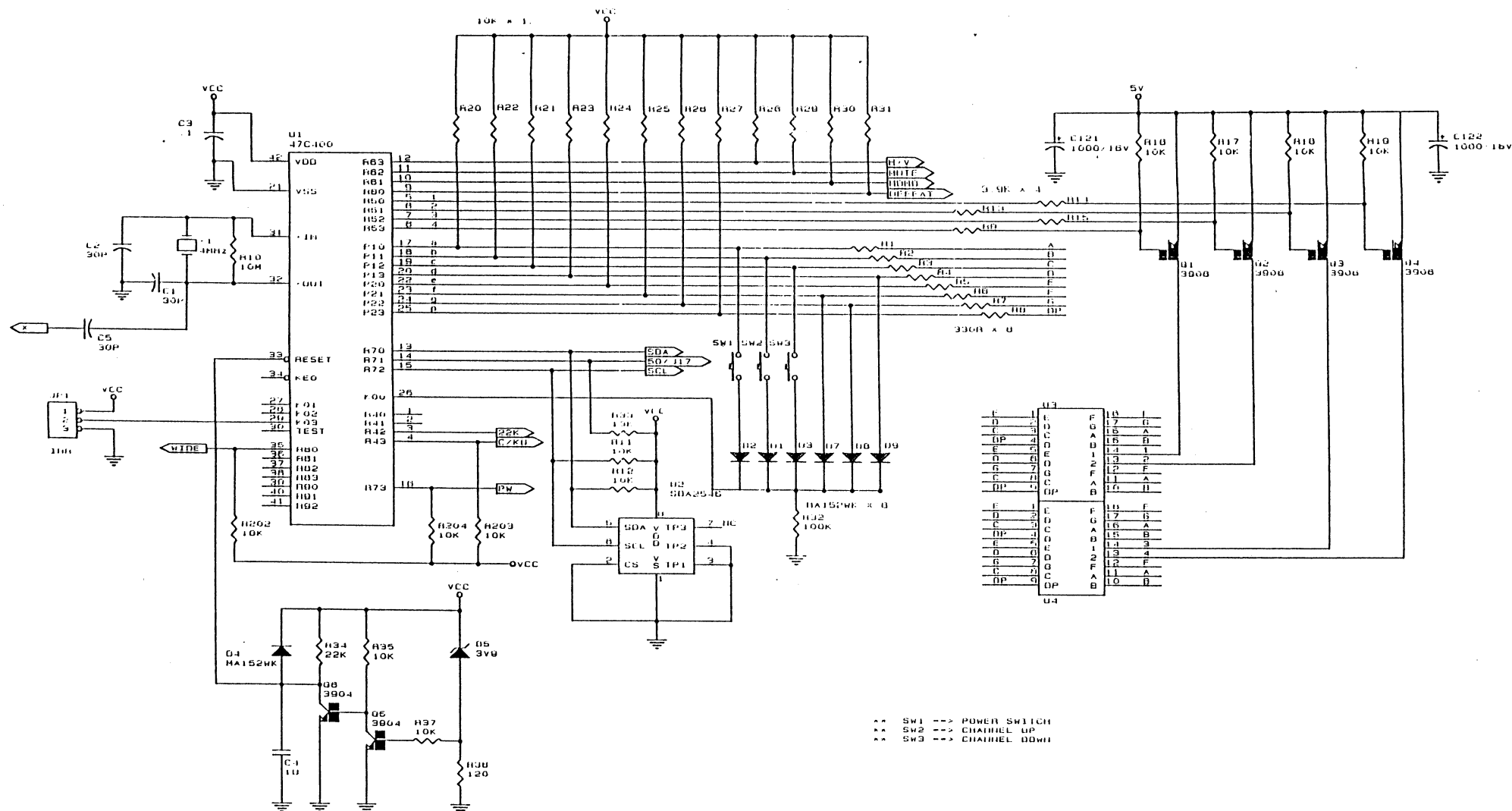
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Date December 9, 1991 Sheet 1 of 1



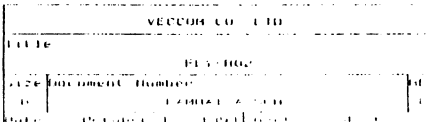
1. SWITCH POWER &
13/18V SHORT PROTECTOR

VEECOM CO. LTD.
1111e
FL-100
1/2" Mount. Board
1/2" Mount. Board

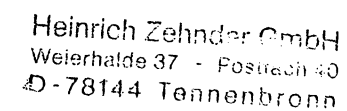


2. CPU, EEPROM, LED

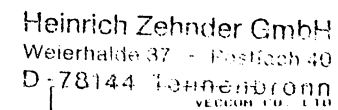
VECCON CO. LTD.			
Title			
F11-H02			
Size Document Number			
D-1 FANMAT-C SCH			
Date: 01.08.01			

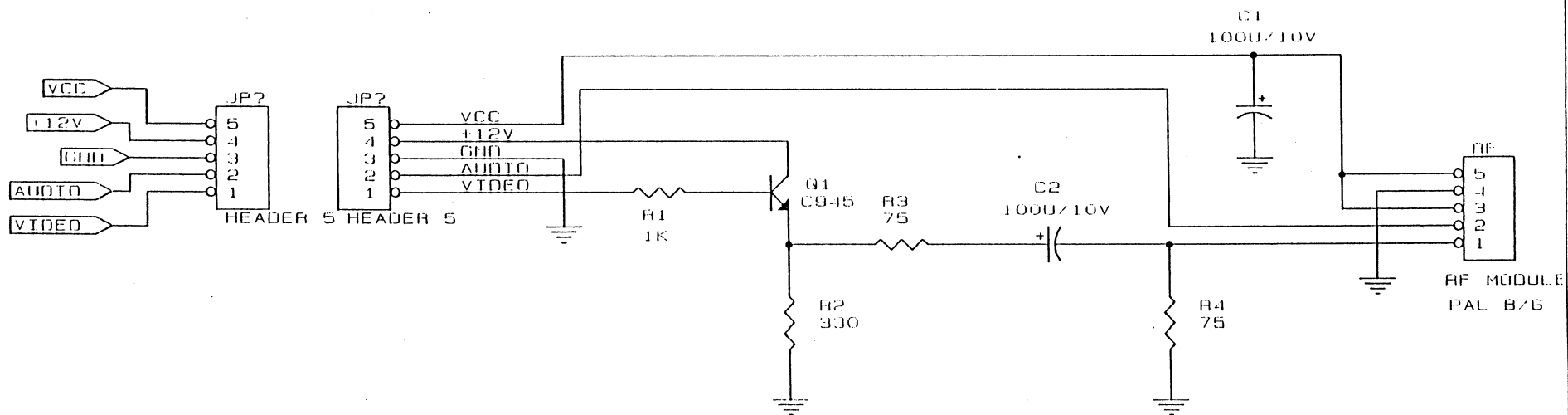


3. AUDIO DEMOD



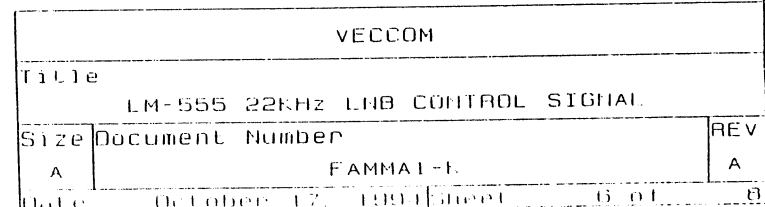
VECCON CO. LTD	
Title	FLY 802
Size	Document Number
1	EXHIBIT - 5 SCH
Date	October 12, 1996
Page	2 of 2



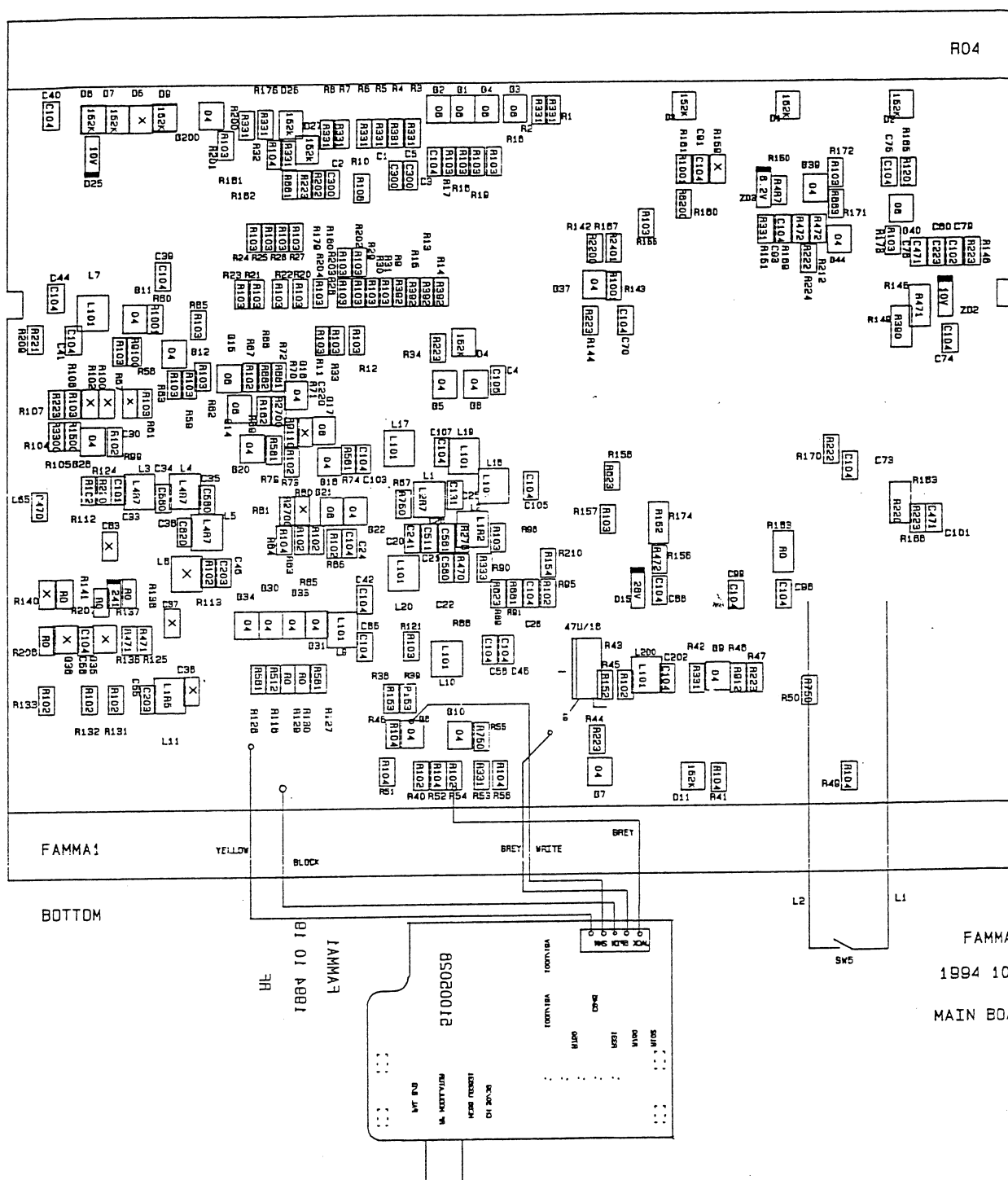


7. RF MODULATOR PREAMPHASIS

1		
Title		
A/V RF MODULATOR BUFFER		
Size	Document Number	REV
A	FAMHAI H	A
Date	10/10/83	10/10/83



FAMMA1
1994 10 20
MAIN BOARD



VECCOW CO., LTD.

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THEORY OF OPERATION

1. TECHNICAL KEY ITEMS :

- * INPUT FREQUENCY RANGE : 950MHZ~2050MHZ
- * MODULATION TYPE : FM
- * CHANNEL WIDTH : 18/27 MHZ SWITCHABLE
- * INPUT SOUND (AUDIO) SUBCARRIER RANGE : 5MHZ~9MHZ
- * AUDIO DE-EMPHASIS : 50us/J17
- * PATTERN INVERTION : (BLACK/WHITE INVERTION) :
THROUGH C/KU BUTTOM
- * LNB SELECTION : POLARIZATION V/H=13V/18V
VCO FREQUENCY= WITH
/WITHOUT 22KHZ
- * AUDIO OUTPUT : STEREO/MONO SELECTABLE
- * VIDEO DESCRAMBLE : THROUGH SCART CONNECTOR
- * MODULATOR : EXTRA DC5V JACK AT REAR
PANNEL FOR MODULATOR
POWERING

2. GENERAL CIRCUIT DESCRIPTION :

* PLEASE REF TO THE BLOCK DIAGRAM

* The BLOCK DIAGRAM could be divided into 4 sections

(1).RF TUNER : Which convert 950~2050 MHZ input to 0~10 MHZ Baseband output (which audio subcarrier range from 5MHZ~9MHZ)

There are 7 input/output pins on the tuner.

- i) 13/18v input to LNB
- ii) demod Base Band output
- iii) 5v
- iv) 25v for frequency synthesizer
- v) IIC Bus SCC CLOCK
- vi) IIC Bus SDA input to set VCO frequency
& if Bandwidth (18/27MHZ)
- vii) GND

(2).CONTROL PORTION :

CPU : controller of all system operation

a: outputs

- 13/18v switch enable
- C/Ku switch enable
- defeat enable
- mute enable
- mono/stereo enable
- 50us/j17 different audio deemphasis enable
- main power supply on/off enable
- 22KHZ generator enable
- 7-segment LED display
- IIC bus for tuner LO frequency setting
tuner IF Bandwidth setting
Audio demod frequency setting

b: input

- IR Receiver input
- IIC bus for EEPROM channel mapping input
- IIC bus for AFC data monitoring

(3).VIDEO/AUDIO PORTION

a:VIDEO

processing tuner output BaseBand signal
(0~10MHZ) to 4 kinds of outputs

CLAMPED VIDEO (standard video)
UNCLAMPED VIDEO (for SCART decoder)
UNFILTERED VIDEO (for SCART decoder)
BASE BAND (for SCART decoder)

b:AUDIO

processing tuner output BaseBand signal.
take 5MHZ~9MHZ portion then demod
according to the audio frequency setting.
There are three outputs:

AUDIO L	Stereo
AUDIO R	Stereo
AUDIO L+R	Mono

(4) POWER SUPPLY

a: MAIN POWER SUPPLY

converts 12~24 VDC input to

5V	for tuner & control portion
12V	for audio/video portion
21V	for 13/18v control on LNB polarization
25V	for tuner frequency synthesiser

b: STANDBY POWER

converts 12~24v DC input to single 5VDC
output for CPU standby when the main power
supply is off.

c:22KHZ GENERATOR

22KHZ generator is used for LNB LO selection

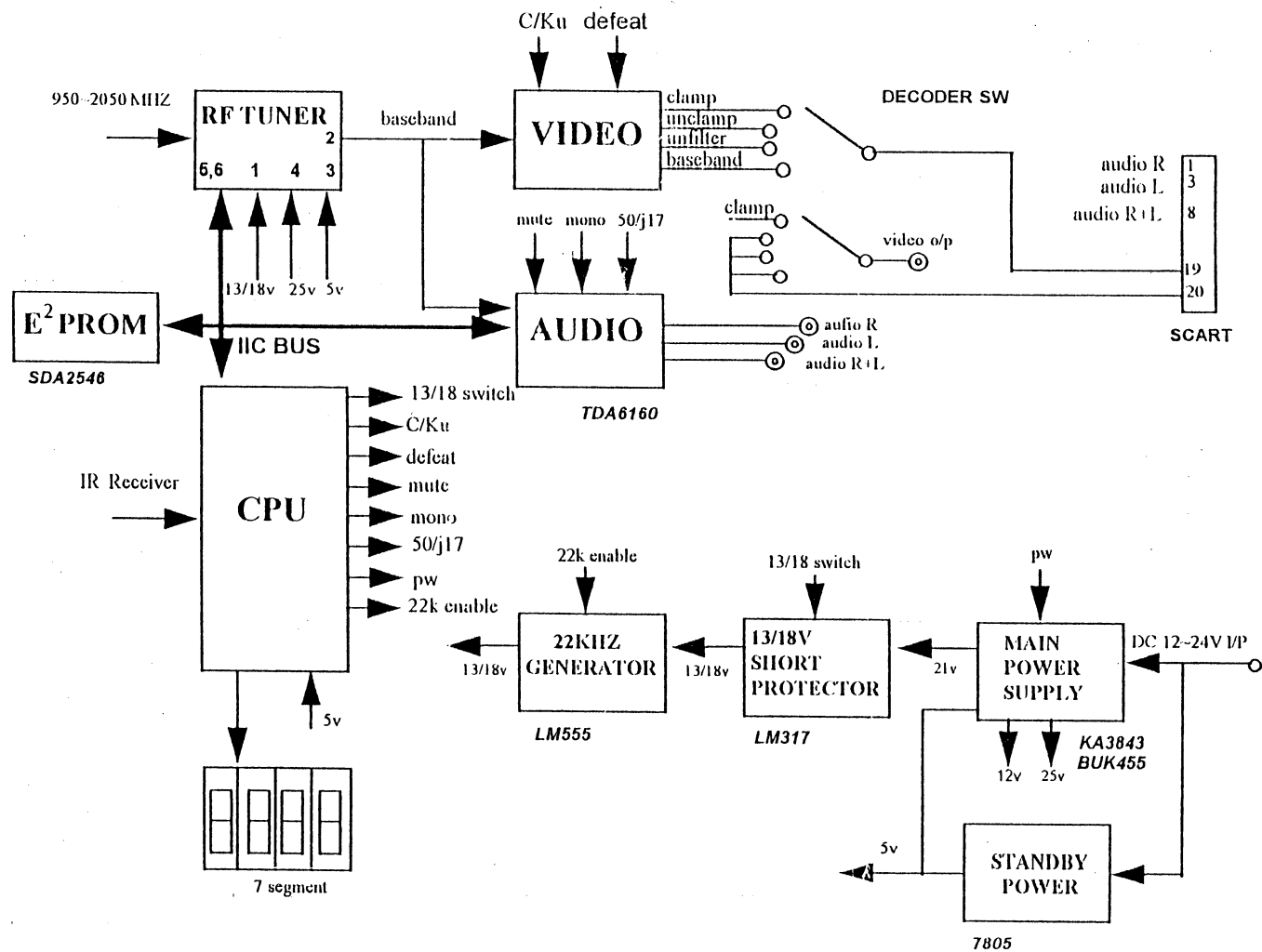
MANTENANCE

1. TEST SETUP :

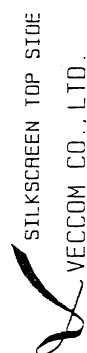
- a) Find a standard 950~2050 MHZ satellite signal source, or a well functional DISH + LNB output, (Make sure the LO of the LNB is not drift too much from it's preset frequency).
- b) Connect the signal source to the input of the receiver, Connect the receiver output to a functional TV set via scart connector or modulator output.
- c) Then tune to a desired channel. (The AFC function of the TV set should be TURNED OFF).
- d) Find the best picture quality by fine tune the frequency.

2. TROUBLESHOOTING:

- a) Check the fuse.
- b) Dose all the connection joints on the signal path fasten tightly?
- c) Dose all the wiring in the receiver stick firmly?
- d) Power status at power pins of CPU, RF module & the other functional blocks should be re-checked.
- e) Use a DC potential meter or an Oscilloscope to monitor the tuning voltage of the RF tuner when tuning the channel up & down. If there is no constant voltage gap between adjacent channels, please check
IIC BUS connection status?
CPU CLOCK function?
CHANNEL LIST in the EEPROM
is missing?(very rare the case)
RF tuner malfunction?(change tuner to confirm)
- f) Use a standard video deemphasis filter inserted between pin2 of the RF tuner & the video input port of a TV, You could get some picture on the TV from the tuner directly (but no sound). If there is no picture, then you have to change a new tuner.
- g) If there is picture from tuner but no picture through the pc board, then you should trace the circuit from the baseband output of the tuner to the video output of the receiver.

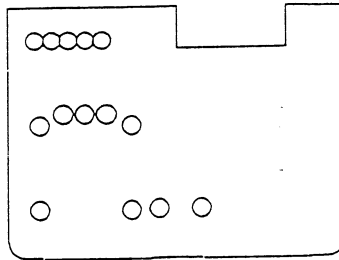
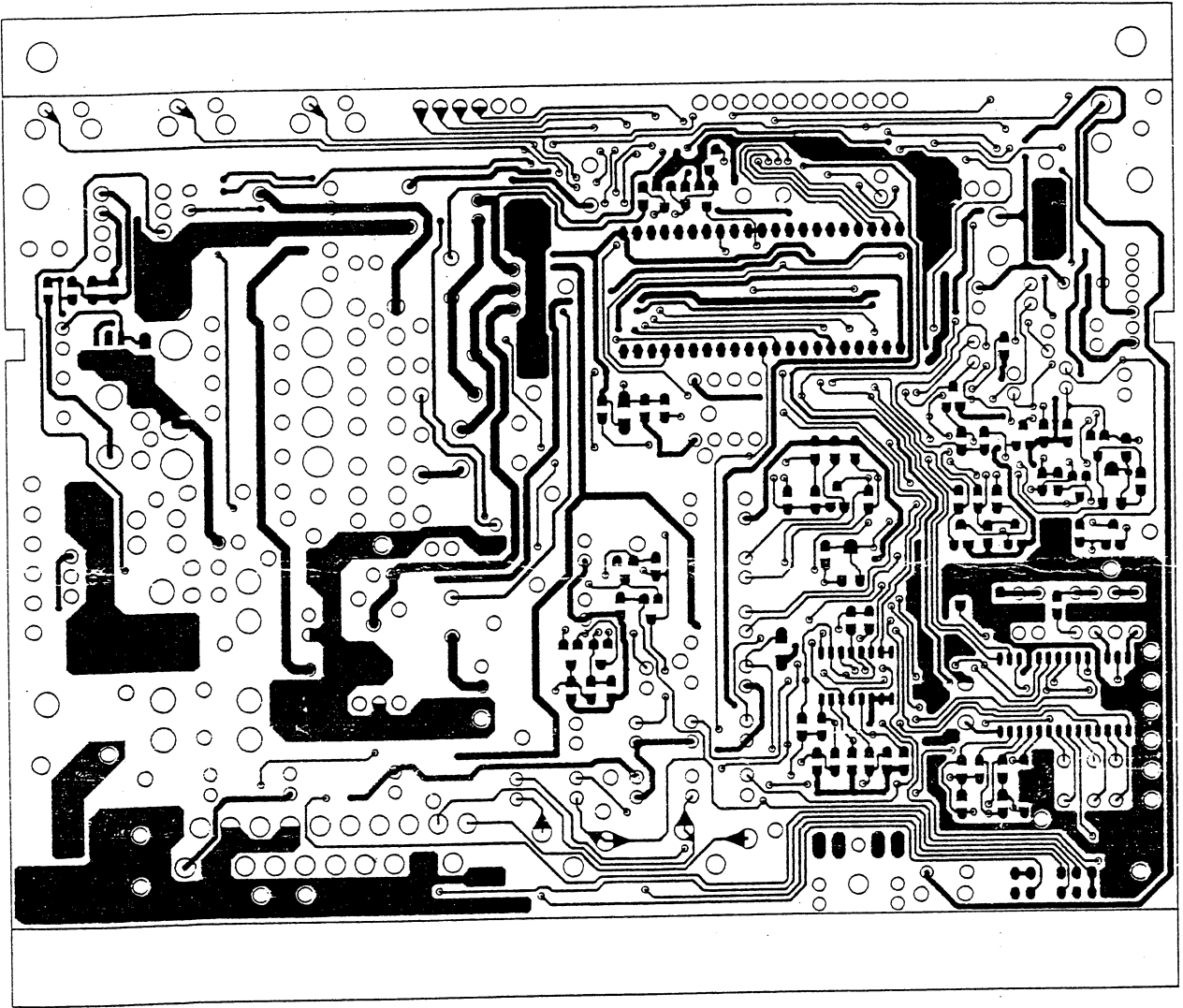


BLOCK DIAGRAM



VECCOM CO., LTD.



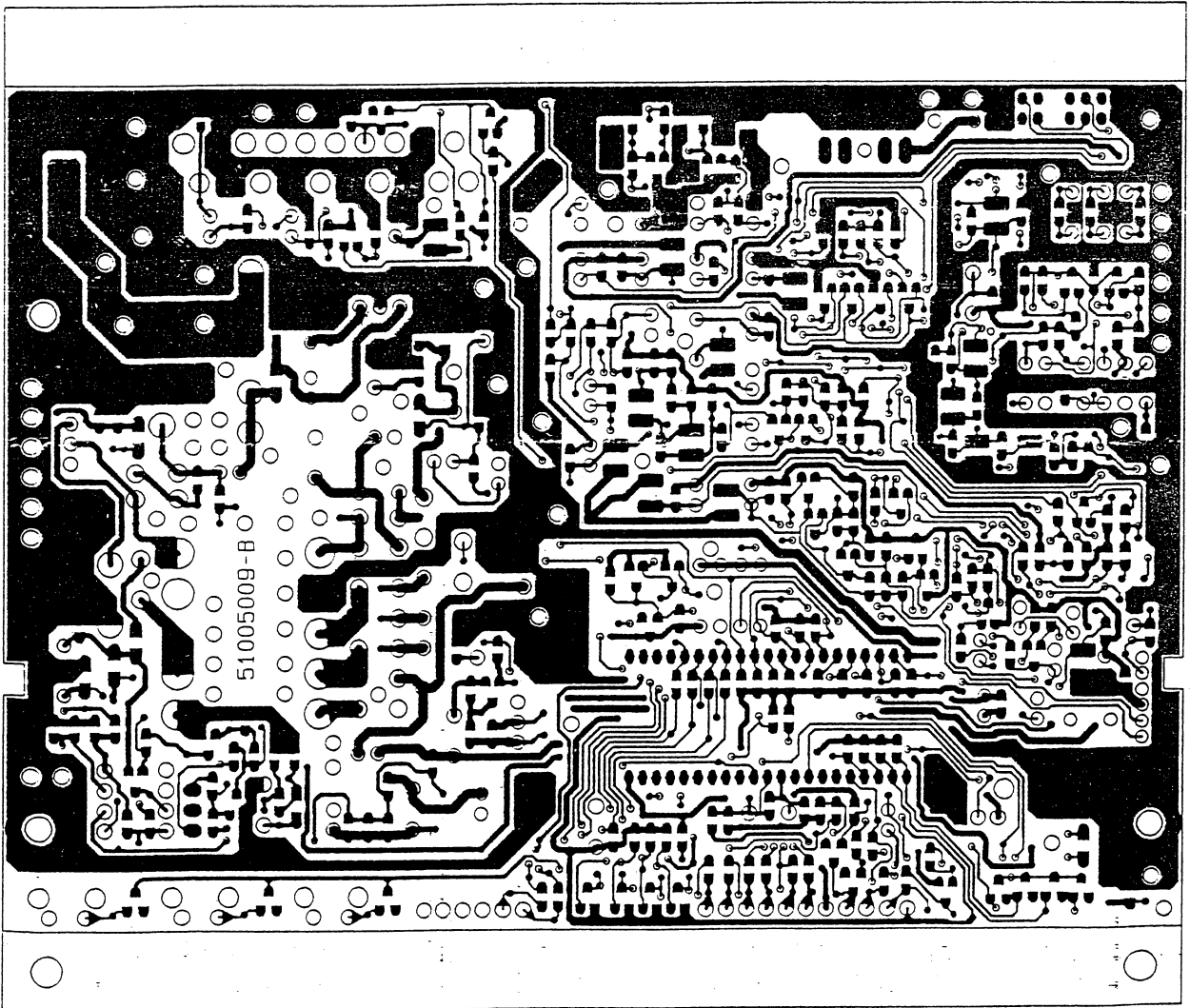
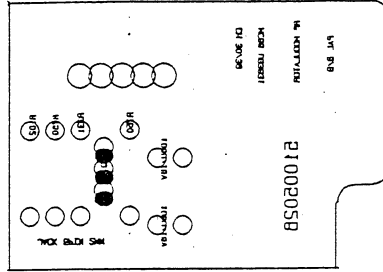


COMPONENT SIDE
VECCOM CO., LTD.

HF

1004 10 10

EWAVI



ASSEMBLY	PART NO.	DESCRIPTION	QUANTITY	LEVEL	LOCATION
.87210010		FAMMA1 MAIN PCB ASY	1.0000	3	
	11001171	HEAT SINK 28*22.5*1.2	2.0000	4	Q42,43
	11002004	SCW M3*6	2.0000	4	Q42,43
	11003008	NUT M3*0.5mm	2.0000	4	Q40,42
	11005001	FUSE CLIPER FC-501V	2.0000	4	F1,F1
	13003021	WIRE #28 5V line 110± 5MM	1.0000	4	??
	13005001	PIN JACK(RCA)	1.0000	4	JP2
	13005020	EAR PHONE MONO JACK 3.5φ	1.0000	4	JP9
	13005030	DC JACK 2mm	1.0000	4	JP8
	13005064	SCART(WITHOUT SCREW HOLE)	1.0000	4	JP6
	13005068	JACK 7 PIN 2MM	1.0000	4	JP7
	14004026	JUMP WIRE 5MM	3.0000	4	FL1,4,6
	14004036	PVC WIRE 22AWG 50MM	2.0000	4	
	16001014	#1869 CHR TO-220A	2.0000	4	Q42,43
	16001015	PLASTIC ISOLATOR(966)	2.0000	4	Q42,43
	18001007	FUSE VDE 4A/250V	1.0000	4	F1
	18002004	SW SPDT DIP	1.0000	4	SW5
	52002014	TRNSSSTR MOSFET BUK455-60A	1.0000	4	Q43
	53001004	IC REGULATOR LM317T	1.0000	4	Q42
	53007007	CAT 24CO8P	1.0000	4	U2
	53007013	IC KA3843 LINER	1.0000	4	U7
	53009013	CPU 47C400 CODE 7 DIP	1.0000	4	U1
	53011001	IC SOCKET 8PIN 2-INLINE	1.0000	4	U2
	53011014	IC SOCKET 42 PINS	1.0000	4	U1
	54001006	SWITCH TACT	3.0000	4	SW1,2,3
	54001019	SWITCH SLIDE SGC-24P-04VS	1.0000	4	SW4
	54002010	DIODE FR103	2.0000	4	D17,18
	54002011	DIODE SF15	1.0000	4	D20
	54002012	DIODE IN4001	1.0000	4	D14
	54002013	DIODE IN4002	1.0000	4	D23
	54002015	DIODE PR1503	3.0000	4	D19,21,22
	54008002	SCR BT169D IT=0.5A/400V	1.0000	4	CR1
	55005002	CC 68P ± 5% NPO	1.0000	4	??
	55011001	CE 47UF 16V + -10%	1.0000	4	
	55012001	EC 1000UF 35V	2.0000	4	C72,100
	55012002	EC 1000UF 16V	4.0000	4	C43,92,121,122
	55012003	EC 470UF 16V	3.0000	4	C86,87,97
	55012004	EC 330UF 25V	1.0000	4	C89

ASSEMBLY	PART NO.	DESCRIPTION	QUANTITY	LEVEL	LOCATION
	55012005	EC 330UF 16V	1.0000	4	C81
	55012006	EC 220UF 35V	3.0000	4	C67,69,88
	55012007	EC 100UF 16V	13.0000	4	C8,9,10,11,23,47,57,59,61,102,104,106
	55012008	EC 47UF 35V	2.0000	4	C83,90
	55012009	EC 47UF 16V	1.0000	4	C62
	55012010	EC 22UF 50V	1.0000	4	C94
	55012012	EC 10UF 35V	3.0000	4	C72,96,111
	55012013	EC 10UF 16V	15.0000	4	C6,7,13,14,15,16,17,19,27,31,32,60,95,108,110
	55012014	CAP 470PF 1KV	1.0000	4	C82
	55012020	CAP 0.001UF 1KV	2.0000	4	C84,85
	55012037	EC 1000UF 10V	1.0000	4	
	56007004	CF DIP 240 OM 1/4W 1%	1.0000	4	??
	56007011	CF DIP 1K OM 1/4W 5%	1.0000	4	??
	56008003	R 22Ω 1/2W 5% V/S	2.0000	4	R153,154
	56008004	R 330Ω 1/2W 5% V/S	2.0000	4	R145,152
	56008007	R 0.15Ω 2W 5% V/S	1.0000	4	R164
	56008036	R100ohm 1/2W +-5%	1.0000	4	R134
	57001025	CHOKE C=DR6*8 L=27U± 10%	4.0000	4	L13,14,15,16
	57001028	CHOKE L=10UH± 10% R=26MOH	1.0000	4	L12
	57002018	INDUCTOR DIP 150UH 5M/M	1.0000	4	L8
	57003023	DISCRIMIATOR 10.7 MHZ	2.0000	4	X2,3
	57003024	DISCRIMIATOR 10.52 MHZ	1.0000	4	X4
	57004062	TRS. DC TO DC	1.0000	4	T1
	58003006	CRYSTAL 4MHz +-30ppm	1.0000	4	X1
	58003038	FILTER 10.52M/150KHZ	1.0000	4	FL5
	58003039	FILTER 10.7M/150KHZ	1.0000	4	FL3
	58003040	FILTER 10.7M/280KHZ	1.0000	4	FL2
	81002001	INFRARE REMOTE SBX1620-52	1.0000	4	JP1
.87110010		FATRA1 BOTTOM CHIP	1.0000	4	
	52004003	TR. PMBS3904 NPN (SMD)	21.0000	5	Q5,6,7,8,9,10,11,12,16,18,20,22,28,30,31,33,34,37,39,44,200
	52004004	TR. PMBS3906 PNP (SMD)	9.0000	5	Q1,2,3,4,14,15,17,21,40
	54001004	DIODE SWITCH BAS32L(SMD)	1.0000	5	
	54002006	DIODE BAS16 SMD	10.0000	5	D1,2,3,4,7,8,9,26,27,111
	54005024	ZENER 10V CHIP 1206	2.0000	5	ZD2,D25
	54005025	ZENER 6.2V CHIP 1206	1.0000	5	ZD3
	54005034	DIODE ZENER 28V	1.0000	5	D15
	55002009	CP 0805 100P 50V +-5%	1.0000	5	C33
	55002012	CP 0805 0.1U 50V +80%-20%	25.0000	5	C3,24,28,39,40,41,42,44,46,56,58,66,68,70,73,74,75,91,93,98,99,103,105,107,202

ASSEMBLY	PART NO.	DESCRIPTION	QUANTITY	LEVEL	LOCATION
	55002013	CP 0805 82P 50V +-5%	1.0000	5	C36
	55002014	CP 0805 1N 50V +-10%	1.0000	5	C79
	55002015	CP 0805 560P 50V ± 10%	1.0000	5	C26
	55002024	CP 0805 22N 50V +-10%	3.0000	5	C45,55,80
	55002033	CP 0805 56P 50V +-5%	2.0000	5	C22,35
	55002067	CP 0805 47P 50V +-5%	1.0000	5	C65
	55002069	CP 0805 68P 50V +-5%	1.0000	5	C34
	55002074	CP 0805 130P 50V +-5%	1.0000	5	C25
	55002079	CP 0805 470F 50V +-10%	2.0000	5	C78,101
	55002099	CP 0805 240F 50V ± 10%	1.0000	5	C20
	55002104	CP 0805 30P 50V ± 5%	3.0000	5	C1,2,5
	55002105	CP 0805 510P 50V ± 5%	1.0000	5	C21
	55002139	CP 0805 1U 16V +80% -20%	1.0000	5	C4
	56001004	CR 0805 22 OM	1.0000	5	R124
	56001005	CR 0805 27 OM	1.0000	5	??
	56001007	CR 0805 47 OM	1.0000	5	R88
	56001016	CR 0805 220 OM	1.0000	5	R209
	56001019	CR 0805 330 OM 5%	14.0000	5	R1,2,3,4,5,6,7,8,42,53,151,176,181,200
	56001022	CR 0805 470 OM	2.0000	5	R125,136
	56001025	CR 0805 680 OM	3.0000	5	R72,91,182
	56001028	CR 0805 1.5K OM	1.0000	5	R45
	56001029	CR 0805 1.8K OM	1.0000	5	R69
	56001030	CR 0805 2.2K OM	2.0000	5	R170,224
	56001035	CR 0805 4.7K OM	3.0000	5	R156,169,212
	56001037	CR 0805 6.8K OM	1.0000	5	R68
	56001039	CR 0805 10K OM	36.0000	5	R11,12,16,17,18,19,20,21,22,23,24,25,26, 27,28,29,30,31,33,57,59,61,62,63,65,98, 106,121,155,157,172,173,201,202,203,204
	56001040	CR 0805 22K OM	8.0000	5	R34,44,47,107,144,148,168,179
	56001042	CR 0805 33K OM	1.0000	5	R90
	56001048	CR 0805 68K OM	1.0000	5	R171
	56001049	CR 0805 82K OM 5%	2.0000	5	R89,158
	56001050	CR 0805 100K OM	8.0000	5	R32,41,46,49,51,52,56,84
	56001053	CR 0805 3.9K OM	4.0000	5	R9,13,14,15
	56001057	CR 0805 0 OM	6.0000	5	R129,130,138,141,207,208
	56001058	CR 0805 1K OM	15.0000	5	R40,43,54,67,73,83,85,86,95,99,112,113 ,131,132,133
	56001061	CR 0805 15K OM	2.0000	5	R38,39
	56001063	CR 0805 4.7 OM	1.0000	5	R150
	56001067	CR 0805 5.1K OM	1.0000	5	R116
	56001084	CR 0805 150K OM	1.0000	5	R210
	56001090	CR 0805 560 OM	4.0000	5	R74,79,126,127
	56001097	CR 0805 75 OM	3.0000	5	R50,55,87
	56001098	CR 0805 2K OM	1.0000	5	R180
	56001101	CR 0805 10M OM	1.0000	5	R10
	56001109	CR 0805 9.1K 1/10W 5%	1.0000	5	R48
	56001113	CR 0805 220Ω 1% 1/10W	1.0000	5	R142
	56001114	CR 0805 2.4KΩ 1% 1/10W	1.0000	5	R167
	56001115	CR 0805 1KΩ 1% 1/10W	3.0000	5	R60,143,161
	56001116	CR 0805 620Ω 1% 1/10W	1.0000	5	R160
	56001117	CR 0805 1.2KΩ 1% 1/10W	1.0000	5	R165
	56001118	CR 0805 910Ω 1% 1/10W	2.0000	5	R58,71
	56001120	CR 0805 330Ω 1% 1/10W	1.0000	5	R104
	56001121	CR 0805 270Ω 1% 1/10W	2.0000	5	R70,81
	56001124	CR 0805 150Ω 1% 1/10W	1.0000	5	R105
	56002066	CR 1206 39Ω	1.0000	5	R149

ASSEMBLY	PART NO.	DESCRIPTION	QUANTITY	LEVEL	LOCATION
.87010004	56002067	CR 1206 22Ω 1/8W ± 5%	1.0000	5	R163
	56002068	CR 1206 0Ω 1/4W	1.0000	5	R183
	56002069	CR 1206 470Ω	1.0000	5	R146
	56002070	CR 1206 1.5K	1.0000	5	R174
	57001014	CL 3225 100UH	8.0000	5	L7,9,10,17,18,19,20,200
	57001018	CL 3225 2.7UH	1.0000	5	L1
	57001019	CL 3225 4.7UH	3.0000	5	L3,4,5
	57001020	CL 3225 1.5UH	1.0000	5	L11
	57001026	CL 3225 1.2UH	1.0000	5	L2
		FATRA1 TOP CHIP	1.0000	5	
	51005009	PCB FLYR01	1.0000	6	
	52004003	TR. PMBS3904 NPN (SMD)	12.0000	6	Q13,19,23,25,26,27,32,45,46,47,201,202
	52004004	TR. PMBS3906 PNP (SMD)	1.0000	6	Q24
	52006002	TR. 1F D1119R SMD	1.0000	6	Q38
	53002011	IC 4053 SMD	1.0000	6	U6
	53007006	IC TDA6160X (SIEMENS)	1.0000	6	U5
	54002006	DIODE BAS16 SMD	1.0000	6	D12
	54004005	DIODE VARICAP BB132	1.0000	6	D13
	54005022	DIODE ZENER 3.9V SMD	1.0000	6	D5
	54005023	ZENER 5.1V CHIP 1206	1.0000	6	ZD1
	55002014	CP 0805 1N 50V +-10%	1.0000	6	C77
	55002015	CP 0805 560P 50V ± 10%	1.0000	6	C18
	55002024	CP 0805 22N 50V +-10%	2.0000	6	C49,51
	55002067	CP 0805 47P 50V +-5%	1.0000	6	C64
	55002097	CP 0805 0.1U 25V +80%-20%	1.0000	6	C53
	55002101	CP 0805 0.01U 50V ± 10%	4.0000	6	C50,52,54,76
	56001004	CR 0805 22 OM	1.0000	6	R177
	56001012	CR 0805 120 OM	1.0000	6	R36
	56001022	CR 0805 470 OM	1.0000	6	R94
	56001025	CR 0805 680 OM	1.0000	6	R166
	56001039	CR 0805 10K OM	7.0000	6	R35,37,64,96,109,205,206
	56001040	CR 0805 22K OM	3.0000	6	R66,111,178
	56001042	CR 0805 33K OM	2.0000	6	R82,108
	56001047	CR 0805 56K OM	1.0000	6	R119
	56001049	CR 0805 82K OM 5%	2.0000	6	R78,147
	56001057	CR 0805 0 OM	4.0000	6	R103,122,123,128
	56001058	CR 0805 1K OM	2.0000	6	R97,135
	56001067	CR 0805 5.1K OM	2.0000	6	R114,117
	56001090	CR 0805 560 OM	1.0000	6	R77
	56001098	CR 0805 2K OM	1.0000	6	R120
	56001119	CR 0805 560Ω 1% 1/10W	1.0000	6	R93
	56001120	CR 0805 330Ω 1% 1/10W	1.0000	6	R110
	56001125	CR 0805 732 OM 1/10W 1%	1.0000	6	R75
	56001130	CR 0805 180 OM 1%	1.0000	6	R76
	56001134	CR 0805 240Ω 1/10W 1%	1.0000	6	R92
	56002065	CR 1206 3.3K	1.0000	6	R162
	56011035	SVR 1KB	1.0000	6	VR2
	56011062	SVR 2KB SMD	1.0000	6	VR1
.87120010		FAMMA1 SMALL PCB ASY	1.0000	4	
	13005065	6 PIN HEADER R/A STRIP	1.0000	5	JP10
	13005066	11 PIN HEADER R/A STRIP	1.0000	5	JF11
	14004029	JUMP WIRE 6.5MM	9.0000	5	W2,3,4,5,6,7,8,9,10
	14004030	JUMP WIRE 9MM	1.0000	5	W1
	51005017	PCB-B FLYR01 DISPLAY	1.0000	5	
	54005016	LED 2*5 RED	1.0000	5	LNB
	54005031	LED 2*5 GREEN	2.0000	5	PW,WIDE
	54006001	DIODE LED HDSP-K511	2.0000	5	US 9

ASSEMBLY	PART NO.	DESCRIPTION	QUANTITY	LEVEL	LOCATION
.87050010		FAMMA1 SWITCH 5V PCB ASY	1.0000	5	
	13005070	HEADER 3PIN R/A STRIP	1.0000	6	J1
	51005022	PCB FLYR01 SWITCHING 5V	1.0000	6	
	53007016	IC KA34063A	1.0000	6	U1
	54003015	DIODE SCHOTTKY IN5819 TAP	1.0000	6	D2
	55005001	CC 510P $\pm 5\%$ NPO	1.0000	6	C17
	55012037	EC 1000UF 10V	1.0000	6	C6
	56007048	CF DIP 12K Ω 1/4W 1%	1.0000	6	R13
	56007049	CF DIP 36K Ω 1/4W 1%	1.0000	6	R12
	56008025	R 1 Ω 1/2W 5%	1.0000	6	R11
	57001029	CHOKE 1UH MIN	1.0000	6	L3
	57001030	CHOKE 200UH $\pm 5\%$	1.0000	6	L8
.87220002		FLYRA1 TUNER PCB	1.0000	3	
	13003017	HSNG 7PIN 2MM	1.0000	4	JP12
	51005034	PCB-B FLYRA1 ALPS TUNER	1.0000	4	
.87240010	81003003	TUNER DBS WITH P3(FLYR01)	1.0000	4	U10
		FAMMA1 22K PCB	1.0000	3	
	13003037	HSNG 5PIN 185MM ASY	1.0000	4	
	13005076	JACK 5PIN 2MM	1.0000	4	JP1
	14004027	JUMP WIRE 10MM	1.0000	4	D2
	51005025	PCB FLYR01 22KHZ	1.0000	4	
	52004003	TR. PMBS3904 NPN (SMD)	1.0000	4	Q3
	52004020	TR. 2SA965-Y DIP PNP	1.0000	4	Q2
	53007002	IC LINEAR NS LM555 3F	1.0000	4	U1
	54001004	DIODE SWITCH BAS32L(SMD)	1.0000	4	D1
	54002015	DIODE PR1503	1.0000	4	D3
	55012048	PEI CAP 0.027U 50V $\pm 5\%$	1.0000	4	C1
	56001025	CR 0805 680 OM	1.0000	4	R8
	56001039	CR 0805 10K OM	2.0000	4	R4,10
	56001054	CR 0805 1.2K OM	2.0000	4	R3,6
	56001055	CR 0805 750 OM	1.0000	4	R5
	56002068	CR 1206 0 Ω 1/4W	1.0000	4	J1
	56002073	CR 1206 2.7K 1/8W $\pm 5\%$	2.0000	4	R7,9
.87250010		FAMMA1 RF-MODULATOR ASY	1.0000	3	
	13003026	HSNG 5PIN 2MM	1.0000	4	
	13005076	JACK 5PIN 2MM	1.0000	4	JP1
	51005028	PCB FLYR01 RF MODULE BFFR	1.0000	4	
	52004014	TR. C945P	1.0000	4	Q1
	55012007	EC 100UF 16V	2.0000	4	C1,2
	56004003	CF 1/4W 330OM 5%	1.0000	4	R2
	56007006	CF DIP 75 OM 1/4W 5%	2.0000	4	R3,4
	56007011	CF DIP 1K OM 1/4W 5%	1.0000	4	R1
	81001001	RF-MODULATOR MCB8-UG3631	1.0000	4	